



Product Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200. This standard must be consulted for specific requirements.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: Lithium-ion Battery - Rechargeable **Drawing Number:** MSDS180003-07
Issue Date: 27-Feb-2023
Supersedes Date: N/A

Alfred Kärcher SE & Co. KG
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**For Hazardous Materials [or Dangerous Goods] Incidents, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1 703-741-5970 (collect calls accepted)
Within New Zealand: 0800 764 766 (National Poisons Centre) or 111 (fire, ambulance, police)**

PRODUCT NUMBERS:

Brand name	Model number	Voltage (V)	Rated capacity (Ah)	Rated Capacity (Wh)
Kärcher	6.445-036.0	18	2.5	45
Kärcher	6.445-037.0	18	5.0	90
Kärcher	6.445-038.0	36	2.5	90
Kärcher	Battery Power 18/25 DW	18	2.4	45
Kärcher	Battery Power 18/50 DW	18	4.8	90

Kärcher	Battery Power 36/25 DW	36	2.4	90
Kärcher	6.447-036.0	18	2.5	45
Kärcher	6.447-037.0	18	5.0	90
Kärcher	6.445-058.0	18	3	54
Kärcher	Battery Power 18/25 DW	18	2.5	45
Kärcher	Battery Power 18/50 DW	18	5.0	90
Kärcher	Battery Power 36/25 DW	36	5	90
Kärcher	Battery Power+ 18/30 DW	18	3	54

SECTION 2: HAZARDS IDENTIFICATION

Health	Environmental	Physical
Eye Irritation: No classified hazards	Acute Toxicity: No classified hazards	Flammable liquid: No classified hazards
Skin Irritation: No classified hazards	Chronic Toxicity: No classified hazards	
Acute Toxicity, Oral: No classified hazards		
Acute Toxicity, Inhalation: No classified hazards		

GHS Label

No applicable labeling

Hazard Statements	Precautionary Statements
No exposure during routine handling of product	

CLASSIFIED HAZARDS

This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200. This SDS contains valuable information for the safe handling and proper use of this product. Save this SDS for future reference.

OTHER HAZARDS

Flammable:

Organic components will burn if cell is incinerated. Combustion of cell contents may cause evolution of Hydrogen Fluoride.

Potential Health Effects:

Fluoride interferes with nerve impulse conduction causing severe pain or absence of sensations

WARNING:

No exposure during routine handling of product. Hydrofluoric Acid exposure during firefighting: This information is given for the use of professional fire fighters responding to a warehouse fire where fire from other materials may incinerate batteries. This section is provided solely in case of exposure, during firefighting, to the combustion by-products.

SECTION 3: COMPOSITION /INFORMATION OF INGREDIENTS

Chemical Name	CAS #	Concentration
Lithium nickel oxide (Li ₂ NiO ₂)	12325-84-7	0 - 35
Carbon (Carbon activated)	7440-44-0	0 - 30
Iron (Fe)	7439-89-6	0 - 25
Copper (Cu)	7440-50-8	0 - 30
Lithium nickel oxide (Lithium nickelate)	12031-65-1	0 - 25
Aluminium (Al)	7429-90-5	0 - 15
Cobalt Lithium dioxide (Lithium cobaltite)	12190-79-3	0 - 50
Dimethyl carbonate (Carbonic acid dimethyl ester)	616-38-6	0 - 10
Lithium Manganese (III,IV) oxide (LiMn ₂ O ₄)	12057-17-9	0 - 15
Polyethylene (Ethene, homopolymer)	9002-88-4	0 - 10
Ethylene carbonate	96-49-1	0 - 5

Lithium hexafluorophosphate(1-) (LiPF ₆)	21324-40-3	0 - 10
Graphite (Grafito)	7782-42-5	0 - 30
Ethyl methyl carbonate (EMC)	623-53-0	0 - 5
Nickel (Ni)	7440-02-0	0 - 5
1,4-Benzenedicarboxylic acid, 1,4-dimethyl ester, polymer with 1,4-cyclohexanedimethanol and 1,2-ethanediol (1,2 ethanediol)	25640-14-6	0 - 1
1-Propene, homopolymer	9003-07-0	0 - 1
Nickel sulphide (Nickel monosulfide)	16812-54-7	0 - 1
Poly[N,N'-(1,4-phenylene)-3,3',4,4'-benzophenonetetracarboxylic imide/amic acid] (Imide resin)	26023-21-2	0 - 1
Silicon (Ferro Silicon)	7440-21-3	0 - 1
Lithium carbonate	554-13-2	0 - 1
Carbon black (Carbon)	1333-86-4	0 - 1
1,3 Butadiene/styrene copolymers (Styrene, butadiene copolymer)	9003-55-8	0 - 1
Acetic acid ethenyl ester, polymer with carbon monoxide and ethene	26337-35-9	0 - 1
Carboxymethyl cellulose sodium salt	9004-32-4	0 - 1
Succinonitrile	110-61-2	0 - 1
Aluminum lithium oxide (AlLiO)	11089-89-7	0 - 1
Lithium nickel cobalt	346417-97-8	0 - 35
Lithium Nickel Cobalt Oxides	113066-89-0	0 - 40
Polyvinylidene Fluoride	24937-79-9	0 - 10
Silicon Monoxide	10097-28-6	0 - 5
Methyl propanoate	554-12-1	0 - 5
4-Fluoro-1,3-dioxolan-2-one	114435-02-8	0 - 5
diiron trioxide	616-38-6	0 - 10
Boehmite (Al(OH)O)	1318-23-6	0 - 1
1-Methyl-2-pyrrolidinone	872-50-4	0 - 1
Chromium	7440-47-3	0 - 1
ethylbenzene	100-41-4	0 - 1
Lithium Nickel Cobalt Manganese Oxides	182442-95-1	0 - 50
diiron trioxide	1309-37-1	0 - 1
Ethylene Carbonate	96-49-1	0 - 10
ethyl acetate	141-78-6	0 - 1

polypropylene	9003-07-0	0 - 5
Metal Oxide (proprietary)	182422-95-1	0 - 50
Cobalt oxide	1307-96-6	0 - 30
Manganese dioxide	1313-13-9	0 - 30
Nickel oxide	1313-99-1	0 - 30
Biphenyl (BP)	92-52-4	0 - 0.3
Titanium dioxide	13463-67-7	0-10
Cobalt hydroxide oxide	12016-80-7	0-10
Tricobalt tetraoxide	1308-06-1	0-10
Magnesium carbonate	546-93-0	0-10
Lithium bis(trifluoromethylsulfonyl)imide	90076-65-6	0-1
Butadiene-Styrene-Itaconic acid copolymer	30174-67-5	0-1
Adiponitrile	111-69-3	0-1
Lithium Iron Phosphate	15365-14-7	0-30
Aluminum, Steel, Nickel and other inert materials	N/A	Remainder

SECTION 4: FIRST AID MEASURES

No exposure during routine handling of product. Risk of exposure occurs only if the battery is mechanically or electrically abused.

No effect under routine handling and use to eyes, skin or if inhaled. Ingestion is not likely, given the physical size and state of the cell. If swallowed, seek medical attention immediately.

If exposure to internal materials within cell due to damaged outer casing the following actions are recommended:

EYE CONTACT:

Flush with water for 15 minutes without rubbing and immediately seek medical attention.

SKIN CONTACT:

Wash area immediately with soap and water. If irritation continues see medical attention.

INHALATION:

Leave area immediately and move to fresh air and seek medical attention.

INGESTION:

If swallowed, contact POISON CONTROL CENTER/DOCTOR immediately.

SECTION 5: FIRE FIGHTING MEASURES

NFPA 704 Hazard Class



HMIS



0 (Minimal)
1 (Slight)
2 (Moderate)
3 (Serious)
4 (Severe)

SUITABLE EXTINGUISHING MEDIA:

Water spray, carbon dioxide, dry chemical powder or appropriate foam. Use agent appropriate for surrounding materials.

UNSUITABLE EXTINGUISHING MEDIA:

None.

PRODUCTS OF COMBUSTION:

Organic components will burn if incinerated. Combustion of cell contents may cause evolution of Hydrogen Fluoride. In case of fire in an adjacent area, use water, CO₂, or dry chemical extinguishers if cells are packed in their original containers since the fuel of the fire is basically paper products.

PROTECTION OF FIREFIGHTERS:

Hydrofluoric Acid exposure during firefighting: This information is given for the use of professional fire fighters responding to a warehouse fire where fire from other materials may incinerate batteries. This section is provided solely in case of exposure, during firefighting, to the combustion by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Use standard industrial clothing in normal use. If handling large containers of cells wear steel-toed footwear. Wear safety glasses/goggles if handling a leakage from the cell or battery. Use gas mask in case of smell. Use ventilation.

ENVIRONMENTAL PRECAUTIONS:

No special precautions necessary.

METHODS FOR CONTAINMENT:

Transport container outdoors. Hold burned cells and fire cleanup solids for disposal as potentially hazardous waste. Unburned cells are not hazardous waste. A fire with over 100 kg of cells burnt will likely require reporting to environmental officials. Always consult and obey all international, federal and local environmental laws.

METHODS FOR CLEAN-UP:

Not applicable.

OTHER INFORMATION:

No data available

SECTION 7: HANDLING AND STORAGE

HANDLING:

Caution: Wrong handling can cause fire or explosion.

Temperature range for charge between 2°C and 50°C

Temperature range for discharge between -19°C and 70°C

Do not open the battery, do not crush, disassemble, drop or solder the battery. Do not puncture, or dispose of in fire. Charge only with the specified chargers designed for this battery.

STORAGE:

Store in a cool, dry place away from sparks and flame. Keep below 50°C. Keep above 0°C. Charge only between 2°C and 50°C.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	OSHA PEL	ACGIH TLV	California Prop 65 Reg. Y/N	IARC/NTP Y/N
Aluminum Foil	TWA 5mg/m ³ *	TWA 5mg/m ³ *	N	N
Biphenyl (BP)	NA	NA	N	N
Copper Foil	NA	NA	N	N
Linear & Cyclic Carbonate solvents	NA	NA	N	N
Graphite Powder/Carbon	NA	NA	N	N
Metal Oxide or other Electrolyte (proprietary)	NA	NA	N	N
Lithium Hexafluorophosphate (LiPF ₆)	NA	NA	N	N
Polyvinylidene Flouride (PVDF)	NA	NA	N	N
Styrene Butadiene Rubber (SBR)	NA	NA	N	N
Aluminum, Steel, Nickel and other inert materials	NA	NA	N	N

EYE PROTECTION:

Not necessary under conditions of normal use

SKIN PROTECTION:

Not necessary under conditions of normal use

RESPIRATORY PROTECTION:

Not necessary under conditions of normal use

ENGINEERING CONTROLS:

Not necessary under conditions of normal use

GENERAL HYGIENE CONSIDERATIONS:

Not necessary under conditions of normal use

EXPOSURE GUIDELINES:

Not necessary under conditions of normal use

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Data represent typical values and are not intended to be specifications. NA=Not Applicable; ND=Not Determined

Physical state:	Solid	Viscosity:	NA
Colour:	NA	Upper Explosive Limits (vol % in air):	NA
Odor:	Odorless	Lower Explosive Limits (vol % in air):	NA
Odor Threshold:	NA	Vapor pressure:	NA
pH:	NA	Vapor density:	NA
Melting/Freezing Point:	NA	Relative density:	NA
VOC Content:	NA	Solubility:	NA
Boiling Point:	NA	Partition Coefficient:	NA
Flash Point:	NA	Auto-ignition Temperature:	NA
Evaporation Rate:	NA	Decomposition Temperature:	NA
Specific Gravity:	NA	Flammability (solid, gas):	Organic components will burn if cell is incinerated

SECTION 10: STABILITY AND REACTIVITY

INCOMPATIBLE MATERIALS:

Water, heat and strong acids.

DECOMPOSITION PRODUCTS MAY INCLUDE:

Hydrogen Fluoride, Phosphorus Oxides, Carbon Monoxide, Carbon Dioxide, Lithium Hydroxide, Manganese Oxides, Aluminum Oxide, possible fluoro-compounds, Carbon soot.

CONDITIONS TO AVOID:

Do not crush, puncture, incinerate, immerse in water or heat over 80°C. Steel casing slowly dissolves in strong mineral acids.

POLYMERIZATION:

Hazardous polymerization will not occur. Spontaneous decomposition will not occur at normal temperature.

CHEMICAL STABILITY:

This product is stable.

REACTIVITY:

Hazardous polymerization will not occur. Spontaneous decomposition will not occur at normal temperature.

SECTION 11: TOXICOLOGY INFORMATION

LIKELY ROUTES OF EXPOSURE: **Inhalation, Eye and Skin contact**

There will be no contact with toxically ingredients of the battery, in case of accidental release, eye contact, skin contact, skin absorption, inhalation only if burned. Hydrofluoric acid is extremely corrosive. Contact with hydrogen fluoride fumes is to be avoided. Permissible exposure limit is 3ppm. In case of contact with hydrogen fluoride fumes, immediately leave the area and seek first aid and emergency medical attention. Symptoms may have delayed onset. Fluoride ions penetrate skin readily causing destruction of deep tissue layers even bone. Fluoride interferes with nerve impulse conduction causing severe pain or absence of sensations. Immediately flush eyes or skin with water for at least 20 minutes to neutralize the acidity and remove some fluoride. Remove and destroy all contaminated clothing and permeable personal possessions. Before re-use, impermeable possessions should be soaked in benzalkonium chloride after washing. Following flushing of the affected areas, an iced aqueous solution of benzalkonium chloride or 2.5% calcium gluconate gel should be applied to react with the fluoride ion. Compresses and wraps may be used for areas where immersion is not practical.

Medicated dressing should be changed every 2 minutes. Exposure to hydrofluoric acid fumes sufficient to cause pain requires immediate hospitalization for monitoring for pulmonary edema.

ACUTE SYMPTOMS AND EFFECTS:

Inhalation: No further toxicological data known
Eye contact: No further toxicological data known
Skin contact: No further toxicological data known
Ingestion: No further toxicological data known

OTHER:

No further data known.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:

None in routine handling of product.

TOXICITY:

No data available

PERSISTENCE AND DEGRADABILITY (BIOPERSISTENCY & BIODEGRADABILITY):

None in routine handling of product.

POTENTIAL OF BIOACCUMULATION:

None in routine handling of product.

MOBILITY IN SOIL:

None in routine handling of product.

OTHER ADVERSE EFFECTS:

No data available

SECTION 13: DISPOSAL CONSIDERATIONS

DISPOSAL:

Dispose in accordance with appropriate regulations. Always consult and obey all international, federal, provincial/state and local hazardous waste disposal laws. Some jurisdictions require recycling of this spent product. Battery recycling is encouraged. Lithium ion batteries are safe for disposal in the normal municipal waste stream since they are not defined by the federal government as hazardous waste. However, Lithium ion batteries are recyclable.

This product does not contain mercury, cadmium or Lithium (metal).

DO NOT INCINERATE or subject battery cells to temperatures in excess of 80°C.

SECTION 14: TRANSPORTATION INFORMATION

U.S. DOT HAZARDOUS MATERIAL REGULATIONS (RE: GROUND TRANSPORT)

Proper Shipping Description:

UN3480 Lithium-ion batteries; UN3481 Lithium-ion batteries packed with or contained in equipment; Class 9.

TPD Ltd. Lithium-ion batteries are to be shipped in compliance with relevant requirements of HMR "49 CFR 173.185".

CANADA TRANSPORT DANGEROUS GOODS (RE: GROUND TRANSPORT)

Proper Shipping Description:

UN3480 Lithium-ion batteries; UN3481 Lithium-ion batteries packed with or contained in equipment; Class 9.

TPD Ltd. Lithium-ion batteries are to be shipped in compliance with relevant requirements of TDG "Part 2" (Section 2.43), or TDG "Schedule 2" (Special Provision 34), as applicable.

INTERNATIONAL DANGEROUS GOODS REGULATIONS (RE: AIR, SEA, GROUND TRANSPORT)

Proper Shipping Description:

UN3480 Lithium-ion batteries; UN3481 Lithium-ion batteries packed with or contained in equipment; Class 9.

TPD Ltd. Lithium-ion batteries are to be shipped in compliance with relevant requirements of the following DG Regulations:

- IATA Dangerous Goods Regulations – 2023(64th Edition) and ICAO Technical Instructions (2022-2023): Apply Section IA, Section IB in PI965, Section I or Section II in PI966 & PI967, as applicable.
- IMDG Code: Packing Instruction P903, or Special Provision 188, as applicable.
- UN Model Regulations on the Transport of Dangerous Goods: Packing Instruction P903, or Special Provision 188, as applicable.
- UN European Agreements (ADR/RID/ADN): Packing Instruction P903, or Special Provision 188, as applicable.
- Australian Dangerous Goods (ADG): Packing Instruction P903, or Special Provision 188, as applicable.

IMPORTANT CONSIDERATIONS:

The proper classification, packaging, labeling, marking, and documentation requirements for shipping Lithium-ion batteries is dependent upon whether the particular batteries are:

- a.) Rated at 100 Watt-hours (Wh) or less; or
- b.) Rated at greater than 100Wh.

Lithium-ion batteries rated 100Wh or less are exempted from certain Class 9 DG requirements. Always check compliance of Lithium-ion battery consignments against the current DG Regulations in effect that govern the chosen mode of transport. When in doubt, contact the carrier or other trained Dangerous Goods professional to confirm acceptability.

UN 38.3 BATTERY TRANSPORTATION TESTING:

TPD Ltd. rechargeable Lithium-ion batteries listed in Section 1 have passed the relevant transportation test requirements as described in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

UN 38.3 Test Reports are maintained on file at the corporate headquarters of Alfred Kärcher SE & Co. KG, Alfred-Kärcher-Str. 28-40, 71364 Winnenden (Germany)

SECTION 15: REGULATORY INFORMATION

GLOBAL INVENTORIES

TSCA: United States	See Sec. 14. Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
DSL: Canada	See Sec. 14. Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
ECL: Korea	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
PICCS: Philippines	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
ENCS: Japan	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
AICS: Australia	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
IECS: China	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
EINECS: European Union	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.

SARA 313 Information:

SARA Title III Section 313: This product does not contain regulated levels of any toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR part 372.

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

This product does not contain regulated levels of any toxic chemical subject to the reporting requirements of California Safe

Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

WHMIS: Canadian Workplace

This product does not contain regulated levels of any toxic chemical subject to the reporting requirements

SECTION 16: OTHER INFORMATION

ABBREVIATIONS:

TSCA	Toxic Substance Control Act
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous
OSHA	Occupational Safety and Health
IARC/NTP	International Agency for Research on Cancer/National Toxicology Program
SARA	Superfund Amendments and Reauthorization Act of 1986
ACGIH	American Conference of Governmental Industrial Hygienists
NIOSH/MSHA	National Institute for Occupational Safety Health/ Mine Safety and Health Administration
WHMIS	Workplace Hazardous Materials Information System

Prepared by: Techtronic Product Development Limited

The batteries referenced herein are considered exempt articles and are not subject to the OSHA Hazard Communication Standard; therefore a SDS is not required. This sheet is being provided as a service to our customers.

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. ***Techtronic Product Development Limited*** makes no warranty, expressed or implied, regarding the accuracy of this data or the results to be obtained from the use thereto.